



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/950,012	09/10/2001	Bruce M. Warnes	MP-268A	9232

7590

09/23/2003

Mr. Edward J. Timmer
Walnut Woods Centre
5955 W. Main Street
Kalamazoo, MI 49009

14

EXAMINER

LEUNG, JENNIFER A

ART UNIT PAPER NUMBER

1764

DATE MAILED: 09/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/950,012

Applicant(s)

WARNES ET AL.

Examiner

Jennifer A. Leung

Art Unit

1764

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 July 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 07 July 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 9, 10, 13.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Response to Amendment

1. Applicant's amendment submitted on July 7, 2003 has been received and carefully considered. The changes made to the specification and drawings are acceptable. Claims 7-11 have been cancelled. Claim 12 has been added. Claims 1-6 and 12 remain active.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 6 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Gero et al. (U.S. 5,948,300).

Regarding claims 1-3 and 12, Gero et al. (FIG. 1; column 3, lines 24-50) disclose an apparatus comprising:

- a base (end cap 26),
- a housing (process tube 12) having a metallic charge (Si semiconductor wafers 22); said housing 12 having a region (open lower end 28, having a laterally extending flange region; see FIG. 1) disposed on said base 26;
- an air-tight seal (i.e., a suitable sealing member such as an O-ring; unlabeled; column 3, lines 34-37) disposed between said region 28 and said base 26, inherently comprising a polymeric material for enabling the disclosed sealing action; said region 28 having a fluid passage (comprising gas delivery lines 42, 44; FIG. 2-4) for cooling said region (column

Art Unit: 1764

2, lines 19-42); and

- a heating device (heating elements **16**) to heat the metallic charge **22**.

Regarding claim 6, Gero et al. (FIG. 1; column 3, lines 33-34) disclose a gas distribution plate (boat **24**) on which said metallic charge **22** is disposed, said plate **24** being disposed in said housing **12** downstream of said flange region **28** in the direction of the gas flow in the apparatus.

Instant claims 1-3, 6 and 12 structurally read on the apparatus of Gero et al.

3. Claims 1, 2, 6 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Baldi (U.S. 3,764,371).

Regarding claims 1, 2 and 12, Baldi (FIG. 1; column 2, lines 42-48) discloses an apparatus comprising:

- a base (retort base **16**),
- a housing (outer retort **12**) having a metallic charge (i.e., chromium diffusion pack comprising MgCl loaded in inner retorts **51**, **52** and **53**; column 3, lines 15-21); said housing **12** having a region (area near the lower opening of housing **12**, comprising a laterally extending flange region; see FIG. 1) disposed on said base **16**;
- an air-tight seal (sealing strip **14**) disposed between said region and said base **16**, inherently comprising a polymeric material for enabling the disclosed sealing action; said region having a fluid passage (outer rim **20**) for cooling said region; and
- a heating device (i.e., by definition, a furnace with shell **10**; column 3, lines 29-32) to heat the metallic charge to a reaction temperature.

Regarding claim 6, Baldi discloses a gas distribution plate (spacer **50**; FIG. 1; column 2, lines 58-62) on which said metallic charge is disposed, said plate being disposed in said housing

Art Unit: 1764

12 downstream of said flange region in the direction of gas flow.

Instant claims 1, 2, 6 and 12 structurally read on the apparatus of Baldi.

4. Claims 1-3, 6 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Christensen (U.S. 5,062,386).

Regarding claims 1-3 and 12, Christensen (FIG. 1, 8; column 4, lines 41-65; column 8, lines 14-59; column 9, lines 30-41; column 9, line 66 to column 10, line 6) discloses an apparatus comprising:

- a base (base plate **16**),
- a housing (bell jar cover **17**) having a metallic charge (Si wafers **13**); said housing **17** having a region (lower open end) disposed on said base **16**;
- an air-tight seal (i.e., sealing flange assembly **18** comprising elastomeric O-rings **63**, **73**, **74**) comprising a polymeric material disposed between said region and said base **16**; said region having a fluid passage (cooling annulus **83**) for cooling said region; and
- a heating device (inductive heating coil **14**) to heat the metallic charge **13** to a reaction temperature.

Regarding claim 6, Christensen discloses a gas distribution plate (susceptor **12**; column 4, lines 43-50; FIG. 1, 8) on which said metallic charge **13** is disposed, said plate being disposed in said housing **17** downstream of said flange region **18** in the direction of gas flow.

Instant claims 1-3, 6 and 12 structurally read on the apparatus of Christensen.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Art Unit: 1764

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gero et al. (U.S. 5,948,300) in view of Applicant's Disclosed Prior Art.

Although Gero et al. is silent as to whether said O-ring seal comprises, specifically, an acid resistant polymeric material, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to select such an O-ring seal for the seal in the apparatus of Gero et al., on the basis of suitability for the intended use (i.e., if acidic reagents are utilized), since such seals are well known and commercially available in the art, as evidenced by Applicant's Disclosed Prior Art. (see page 7, last paragraph to page 8, first paragraph; i.e., commercially available acid resistant Viton O-ring). Additionally, it has been held that the substitution of known equivalent structures involves only ordinary skill in the art. *In re Fout* 213 USPQ 532 (CCPA 1982); *In re Susi* 169 USPQ 423 (CCPA 1971); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *In re Ruff* 118 USPQ 343 (CCPA 1958).

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gero et al. (U.S. 5,948,300) in view of Tom et al. (U.S. 5,531,971).

Gero et al. (FIG. 1; column 3, lines 45-50) further disclose an inlet fitting (inlet port 30) and an outlet fitting (outlet port 32). Although Gero et al. are silent as to said inlet 30 and outlet 32 fittings comprising, specifically, zero clearance fittings, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to select such a

Art Unit: 1764

fitting type for the fittings in the apparatus of Gero et al., on the basis of suitability for the intended use, since such fittings are well known and commercially available in the art, as evidenced by Tom et al. In particular, Tom et al. teach that in semiconductor manufacturing, connections and fittings of high integrity and non-contaminating nature, such as VCR or Swagelok fittings, must be used, since many of the gases used are toxic or flammable, and all must be of exceptionally high purity (column 10, lines 46-50). Additionally, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to select an appropriate location for the inlet 30 and outlet 32 fittings, respectively, in the apparatus of Gero et al., on the basis of suitability for the intended use, since shifting location of parts was held to have been obvious. *In re Japikse*, 181 F.2d 1019, 1023, 86 USPQ 70, 73 (CCPA 1950).

7. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baldi (U.S. 3,764,371) in view of Applicant's Disclosed Prior Art.

Although Baldi is silent as to whether air tight seal 14 comprises, specifically, an O-ring of acid resistant polymeric material, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to select such a seal for the air tight seal 14 in the apparatus of Baldi, on the basis of suitability for the intended use, since such seals are well known and commercially available in the art, as evidenced by Applicant's Disclosed Prior Art. (see page 7, last paragraph to page 8, first paragraph; i.e., commercially available acid resistant Viton O-ring). Additionally, it has been held that the substitution of known equivalent structures involves only ordinary skill in the art. *In re Fout* 213 USPQ 532 (CCPA 1982); *In re Susi* 169 USPQ 423 (CCPA 1971); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *In re Ruff* 118 USPQ 343 (CCPA 1958).

Art Unit: 1764

8. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Christensen (U.S. 5,062,386) in view of Applicant's Disclosed Prior Art.

Although Christensen is silent as to whether said O-ring seal comprises, specifically, an acid resistant polymeric material, it would have been an obvious design choice for one of ordinary skill in the art at the time the invention was made to select such a material for the seal in the apparatus of Christensen, on the basis of suitability for the intended use, since such seals are well known and commercially available in the art, as evidenced by Applicant's Disclosed Prior Art. (see page 7, last paragraph to page 8, first paragraph; i.e., commercially available acid resistant Viton O-ring). Also, substitution of known equivalent structures involves only ordinary skill in the art. *In re Fout* 213 USPQ 532 (CCPA 1982); *In re Susi* 169 USPQ 423 (CCPA 1971); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *In re Ruff* 118 USPQ 343 (CCPA 1958).

Response to Arguments


9. Applicant's arguments with respect to claims 1-6 and 12 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer A. Leung whose telephone number is 703-305-4951. The examiner can normally be reached on 8:30 am - 5:30 pm M-F, every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn A. Caldarola can be reached on 703-308-6824. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

Jennifer A. Leung
September 22, 2003 


HIEN TRAN
PRIMARY EXAMINER